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IS 6751 (1972): Aluminium Alloy Castings and Strips for Bearings [MTD 7: Light Metals and their Alloys]

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## *Indian Standard*

# SPECIFICATION FOR ALUMINIUM ALLOY CASTINGS AND STRIPS FOR BEARINGS

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BUREAU OF INDIAN STANDARDS  
MANAK BHAVAN, 9 BAIJADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

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# *Indian Standard*

## SPECIFICATION FOR ALUMINIUM ALLOY CASTINGS AND STRIPS FOR BEARINGS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 20 December 1972, after the draft finalized by the Light Metals and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** With the development of heavy engineering industry, the amount of bearing metal required is increasing at a very fast rate. The industry consumes large quantities of copper, lead, zinc, tin and antimony for bearings. Since these materials are scarce, need has been felt to substitute them with aluminium bearing alloys which have desirable properties and have been used in a wide variety of applications for many years. Requirements for two grades of cast and rolled alloys are specified in this standard. Cast alloys are used for solid bearings and rolled alloys are used in the form of strip for bimetal and trimetal backed bearings.

**0.3** This standard has been prepared with a view to encouraging the industry to use aluminium bearing alloys.

**0.4** While preparing this standard, the views of producers and consumers were taken into account and the standard has been related to the manufacturing and trade practices followed in the country in this field. Also assistance has been derived from the following publications:

Metals handbook. Vol 1. Properties and selection of metals.  
Ed 8; 1964. American Society for Metals, Ohio.

1972 SAE handbook. Society of Automotive Engineers, Inc., New York.

**0.5** This standard contains clauses **3.1** and **3.2** which call for agreement between the supplier and the purchaser.

**0.6** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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\*Rules for rounding off numerical values (*revised*).

## 1. SCOPE

**1.1** This standard covers requirements of aluminium alloys in cast and rolled form for bearings used in automobile and other engineering applications.

## 2. MANUFACTURE

**2.1** Ingots of cast and wrought alloys specified in IS : 6754-1972\* shall be used for making castings and strips for bearings.

## 3. PHYSICAL PROPERTIES

**3.1** Rockwell hardness of castings shall be as specified in Table 1. The hardness shall be determined for any one of the conditions as agreed to between the supplier and the purchaser.

**TABLE 1 PROPERTIES OF CAST ALLOYS AT 27°C**

CAST ALLOY DESIGNATION	CONDITION	ROCKWELL H HARDNESS, Min
8482	Aged	102
8328	Aged	85

**NOTE** — Typical ageing treatment for alloys are the following:

- a) Alloy 8482 is aged at 210°C for 10h.
- b) Alloy 8328 is aged at 227°C for 7h.

**3.2** Tensile strength and elongation of strips for bearings when tested in accordance with IS : 1816-1961† shall be as given in Table 2. The hardness shall be determined for any one of the conditions as agreed to between the supplier and the purchaser.

**TABLE 2 PROPERTIES OF WROUGHT ALLOYS IN THE FORM OF STRIP**

WROUGHT ALLOY DESIGNATION	CONDITION	ROCKWELL H HARDNESS, Min	TENSILE STRENGTH, kgf/mm <sup>2</sup> , Min	ELONGATION PERCENT ON 50 mm GAUGE LENGTH, Min
83428	*Cold reduction	99	22.5	7
	As rolled and annealed	67	15.0	29
89200	As manufactured	—	19.5	10.0

\*Typical cold reduction of 28 percent is given to attain the properties.

\*Specification for aluminium alloy ingots for bearings.

†Method for tensile test for light metals and their alloys.

## **4. SAMPLING**

**4.1** Cast bearings or rolled strips for bearings shall be divided into lots of 300 or fraction thereof and one test sample shall be taken from each lot for purpose of tests. Separate test bar representing the bearing in the cast form shall be used for the purpose of testing.

## **5. RETEST**

**5.1** If a sample selected for mechanical tests fails to meet the requirements of this standard, two further test samples from the same lot shall be selected for testing. If both the retest samples meet the requirements of this standard, the lot represented thereby shall be deemed to comply with the requirements for mechanical tests.

**5.1.1** For heat-treatable alloys, the supplier shall have the right to re-heat-treat the material before the two further samples are selected.

## **6. MARKING**

**6.1** Aluminium alloy castings and strips for bearings shall be marked with the name of the manufacturer, alloy designation and condition. The supplier shall furnish a certificate that the material supplied complies with the requirements of this specification.

### **6.2 BIS Certification Marking**

The product may also be marked with Standard Mark.

**6.2.1** The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.